

WE CLAIM:

1. A chewing gum comprising:
a gum center including a water-soluble portion and a water-insoluble portion;
5 and
a coating that at least substantially surrounds the gum center, the coating
including a metal salt that is designed to provide breath freshening characteristics to a
consumer of the chewing gum.

10 2. The chewing gum of Claim 1 wherein the coating includes a surfactant.

3. The chewing gum of Claim 2 wherein the surfactant is a non-ionic
surfactant selected from the group consisting of poly (C₂-C₄-alkoxy) esters of C₁₈-C₂₀
fatty acids, C₄-C₂₀ alkyl poly (C₂-C₄-alkoxy) esters of C₈-C₂₀ fatty acids, poly (C₂-C₄
15 alkoxy) esters of sorbitan, poly (C₂-C₄ alkoxy) – C₁-C₂₀ alcohols, polyethylene
glycols, and mixtures thereof.

4. The chewing gum of Claim 1 wherein the metal salt is chosen from the
group consisting of food acceptable zinc and copper salts.

20 5. The chewing gum of Claim 1 wherein the metal salt includes a zinc salt
selected from the group consisting of: zinc stearate; zinc acetate; zinc gluconate; zinc
lactate; zinc ammonium sulfate; zinc chromate; zinc citrate; zinc dithionate; zinc
fluorosilicate; zinc tartrate; zinc formate; zinc iodide; zinc nitrate; zinc phenol
25 sulfonate; zinc salicylate; zinc sulfate; zinc succinate; zinc glycerophosphate; and zinc
halides.

6. The chewing gum of Claim 1 wherein the metal salt includes a copper
salt selected from the group consisting of: copper stearate; copper acetate; copper
gluconate; copper lactate; copper ammonium sulfate; copper chromate; copper citrate;
30 copper dithionate; copper fluorosilicate; copper tartrate; copper formate; copper iodide;

copper nitrate; copper phenol sulfonate; copper salicylate; copper sulfate; copper succinate; copper glycerophosphate; and copper halides.

5 7. The chewing gum of Claim 2 wherein the coating includes an edible oil.

8. The chewing gum of Claim 1 wherein the coating includes a cooling agent.

10 9. The chewing gum of Claim 8 wherein the cooling agent is selected from the group consisting of: menthol; monomenthyl succinate and salts thereof; cyclic carboxamides; acyclic carboxamides; menthyl acetate; menthyl lactate; menthone ketals; 3-menthoxypropane-1,2 diol; and mixtures thereof.

15 10. The chewing gum of Claim 1 including at least one beneficial component selected from the group consisting of: fluoride salts; calcium salts; pyrophosphates; polyphosphates; antibacterial agents; cetylpyridinium chloride; chlorhexidine; essential oil mixtures containing menthol eucalyptol methyl salicylate, and thymol; botanical extracts; tooth desensitizing agents; potassium nitrate; plaque surface adhesion inhibitors; polydimethylsiloxane/surfactant; abrasive agents such as
20 kaolin; silicas; surfactants; sodium laurel sulfate; and antibiotics.

11. The chewing gum of Claim 7 wherein the edible oil is a vegetable oil.

25 12. A chewing gum product comprising:
a metal salt;
a gum center including a water-soluble portion, a water-insoluble portion; and
a coating surrounding the gum center, including a cooling agent.

30 13. The chewing gum of Claim 12 wherein the coating does not include the metal salt.

14. The chewing gum of Claim 12 wherein the gum center and coating each include the metal salt.

15. The chewing gum of Claim 12 wherein the coating includes a surfactant.

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16. The chewing gum of Claim 15 wherein the surfactant is a non-ionic surfactant selected from the group consisting of poly (C₂-C₄-alkoxy) esters of C₁₈-C₂₀ fatty acids, C₄-C₂₀ alkyl poly (C₂-C₄-alkoxy) esters of C₈-C₂₀ fatty acids, poly (C₂-C₄ alkoxy) esters of sorbitan, poly (C₂-C₄ alkoxylated) - C₁-C₂₀ alcohols, polyethylene glycols, and mixtures thereof.

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17. The chewing gum of Claim 12 wherein the metal salt is chosen from the group consisting of zinc and copper.

18. The chewing gum of Claim 12 wherein the metal salt includes a zinc salt selected from the group consisting of: zinc stearate; zinc acetate; zinc gluconate; zinc lactate; zinc ammonium sulfate; zinc chromate; zinc citrate; zinc dithionate; zinc fluorosilicate; zinc tartrate; zinc formate; zinc iodide; zinc nitrate; zinc phenol sulfonate; zinc salicylate; zinc sulfate; zinc succinate; zinc glycerophosphate; and zinc halides.

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19. The chewing gum of Claim 12 wherein the metal salt includes a copper salt selected from the group consisting of: copper stearate; copper acetate; copper gluconate; copper lactate; copper ammonium sulfate; copper chromate; copper citrate; copper dithionate; copper fluorosilicate; copper tartrate; copper formate; copper iodide; copper nitrate; copper phenol sulfonate; copper salicylate; copper sulfate; copper succinate; copper glycerophosphate; and copper halides.

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20. The chewing gum of Claim 13 wherein the coating includes an edible

30 oil.

21. A product that provides breath freshening properties to a consumer comprising:

a gum center including a water-soluble portion and a water-insoluble portion;
and

5 a coating including a surfactant and a metal salt selected from the group consisting of zinc and copper salts.

22. The chewing gum of Claim 21 wherein the coating includes an edible oil.

10 23. The chewing gum of Claim 21 wherein the coating includes a cooling agent.

24. The chewing gum of Claim 21 wherein the metal salt includes a zinc salt
15 selected from the group consisting of: zinc stearate; zinc acetate; zinc gluconate; zinc lactate; zinc ammonium sulfate; zinc chromate; zinc citrate; zinc dithionate; zinc fluorosilicate; zinc tartrate; zinc formate; zinc iodide; zinc nitrate; zinc phenol sulfonate; zinc salicylate; zinc sulfate; zinc succinate; zinc glycerophosphate; and zinc halides.

20 25. The chewing gum of Claim 21 wherein the metal salt includes a copper salt selected from the group consisting of: copper stearate; copper acetate; copper gluconate; copper lactate; copper ammonium sulfate; copper chromate; copper citrate; copper dithionate; copper fluorosilicate; copper tartrate; copper formate; copper iodide;
25 copper nitrate; copper phenol sulfonate; copper salicylate; copper sulfate; copper succinate; copper glycerophosphate; and copper halides.

26. The chewing gum of Claim 21 including at least one beneficial
30 component selected from the group consisting of: fluoride salts; calcium salts; pyrophosphates; polyphosphates; antibacterial agents; cetylpyridinium chloride; chlorhexidine; essential oil mixtures containing menthol eucalyptol methyl salicylate,

copper nitrate; copper phenol sulfonate; copper salicylate; copper sulfate; copper succinate; copper glycerophosphate; and copper halides.

32. The chewing gum of Claim 28 wherein the cooling agent is selected
5 from the group consisting of: menthol; monomenthyl succinate and salts thereof; cyclic carboxamides; acyclic carboxamides; menthyl acetate; menthyl lactate; menthone ketals; 3-menthoxypropane-1,2 diol; and mixtures thereof.

33. The chewing gum of Claim 28 including at least one beneficial
10 component selected from the group consisting of: fluoride salts; calcium salts; pyrophosphates; polyphosphates; antibacterial agents; cetylpyridinium chloride; chlorhexidine; essential oil mixtures containing menthol, eucalyptol, methyl salicylate, and thymol, botanical extracts; tooth desensitizing agents; potassium nitrate; plaque surface adhesion inhibitors; polydimethylsiloxane/surfactant; abrasive agents such as
15 kaolin; silicas; surfactants; sodium laurel sulfate; and antibiotics.

34. A method for treating halitosis comprising the steps of chewing a
chewing gum comprising a gum center including a water-soluble portion, a water-
insoluble portion, a coating that at least substantially surrounds the gum center, the
20 coating including a therapeutically effective amount of a metal salt.

35. A method of treating halitosis comprising the steps of chewing a
chewing gum comprising a therapeutically effective amount of a metal salt, a gum
center including a water-soluble portion, a water-insoluble portion, and a coating
25 surrounding the gum center, including a cooling agent.

36. The method of Claim 35 wherein the coating does not include the metal
salt.

30 37. The method of Claim 35 wherein the gum center and coating each
include the metal salt.